We claim:

1. A multiple-carrier wave system, comprising:

a collector including a focal point;

a first antenna array sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first path of said first antenna array and a second distributed signal sent by said second path of said first antenna array such that said first and second distributed signals of said first carrier wave signal arrive at said focal point of said collector in modulo 2π radian phase coherence with respect to each other; and

a second antenna array sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second antenna array and a second distributed signal sent by said second path of said second antenna array such that said first and second distributed signals of said second carrier wave signal arrive at said focal point of said collector in modulo 2π radian phase coherence with respect to each other.

2. The system of claim 1, further comprising:

a first phase shifter controlling said phase of said first distributed signal of said first carrier wave signal; and

a second phase shifter controlling said phase of said second distributed signal of said first carrier wave signal.

3. The system of claim 2, further comprising:

a first amplifier amplifying said first distributed signal of said first carrier wave signal; and

a second amplifier amplifying said second distributed signal of said first carrier wave signal.

4. The system of claim 2, wherein said first and second paths of said second antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2π radian phase coherence of said first and second distributed signals of said second carrier wave signal is achieved.

5. The system of claim 1, wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved.

6. The system of claim 5, further comprising:

a first amplifier amplifying said first distributed signal of said first carrier wave signal; and

a second amplifier amplifying said second distributed signal of said first carrier wave signal.

7. The system of claim 1, further comprising:

an E-M reflector reflecting said first and second carrier wave signals changing said focal point of said collector.

8. The system of claim 1, further comprising:

a band pass filter filtering said first and second carrier wave signals collected by said collector.

9. The system of claim 1, wherein said first carrier wave signal sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type.

10. A multiple-carrier wave system, comprising:

a collector including a focal point;

a first antenna array sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first

path of said first antenna array and a second distributed signal sent by said second path of said first antenna array such that said first and second distributed signals of said first carrier wave signal are polarized in a first orientation and arrive at said focal point of said collector in modulo 2π radian phase coherence with respect to each other;

a second antenna array sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second antenna array and a second distributed signal sent by said second path of said second antenna array such that said first and second distributed signals of said second carrier wave signal are polarized in a second orientation and arrive at said focal point of said collector in modulo 2π radian phase coherence with respect to each other; and

an orthomode transducer (OMT) extracting from said collector said first and second carrier wave signals polarized in said first and second orientations, respectively.

11. The system of claim 10, wherein said first and second orientations are orthogonal with respect to each other.

12. The system of claim 11, further comprising:

a first phase shifter controlling said phase of said first distributed signal of said first carrier wave signal; and

a second phase shifter controlling said phase of said second distributed signal of said first carrier wave signal.

13. The system of claim 12, further comprising:

a first amplifier amplifying said first distributed signal of said first carrier wave signal; and

a second amplifier amplifying said second distributed signal of said first carrier wave signal.

14. The system of claim 11, wherein said first and second paths of said first antenna array are physically spaced with respect to the focal point of the collector so that said modulo 2π radian phase coherence of said first and second distributed signals of said first carrier wave signal is achieved.

15. The system of claim 14, further comprising:

a first amplifier amplifying said first distributed signal of said first carrier wave signal; and

a second amplifier amplifying said second distributed signal of said first carrier wave signal.

16. The system of claim 10, further comprising:

a first band pass filter filtering said first carrier wave signal polarized in said first orientation and extracted by said OMT; and

a second band pass filter filtering said second carrier wave signal polarized in said second orientation and extracted by said OMT.

17. The system of claim 10, wherein at least one of said first and second carrier wave signals sent by said first antenna array is at least one of TDMA, FDMA, and CDMA type.

18. A carrier wave system, comprising:

a reverse-fed Rotman lens including a set of array ports and a set of beam ports; and

a first antenna array sending a first carrier wave signal, said first antenna array including a first path and a second path wherein said first carrier wave signal is distributed into a first distributed signal sent by said first path of said first antenna array and a second distributed signal sent by said second path of said first antenna array, said first and second paths of said first antenna array being connected to first and second array ports of said set of array ports such that a combined energy of said first and second distributed signals of said first carrier wave signal is a maximum at a first beam port.

19. The system of claim 18, further comprising:

a first connecting cable connecting said first path of said first antenna array to said first array port; and

a second connecting cable connecting said second path of said first antenna array to said second array port.

20. The system of claim 19, wherein said first and second connecting cables are phase-determined such that an electrical length of said first distributed signal from said first path of said first antenna array to said first array port is modulo 2π equal to an electrical length of said second distributed signal from said second path of said first antenna array to said second array port.

21. The system of claim 18, further comprising:

a first phase shifter controlling said phase of said first distributed signal of said first carrier wave signal; and

a second phase shifter controlling said phase of said second distributed signal of said first carrier wave signal.

22. The system of claim 21, further comprising:

a first amplifier amplifying said first distributed signal of said first carrier wave signal; and

a second amplifier amplifying said second distributed signal of said first carrier wave signal.

23. The system of claim 18, further comprising:

a band pass filter filtering said first carrier wave signal collected at said first beam port.

24. The system of claim 18, further comprising:

a second antenna array sending a second carrier wave signal, said second antenna array including a first path and a second path wherein said second carrier wave signal is distributed into a first distributed signal sent by said first path of said second antenna array and a second distributed signal sent by said second path of said second antenna array, said first and second paths of said second antenna array being connected to third and fourth array ports of said set of array ports such that a combined energy of said first and second distributed signals of said second carrier wave signal is a maximum at a second beam port.

25. The system of claim 22, wherein said first and second beam ports are the same.

26. The system of claim 25, further comprising:

a band pass filter filtering said first and second carrier wave signals collected at the common beam port.

27. The system of claim 24, further comprising:

a first band pass filter filtering said first carrier wave signal collected at said first beam port; and

a second band pass filter filtering said second carrier wave signal collected at said second beam port.

29. The system of claim 18, wherein said first carrier wave signal is at least one of TDMA, FDMA, and CDMA signals.

30. The system of claim 18, wherein a phase shift setting associated with each of the first and second paths of the first antenna array is controlled to selectively maximize the combined energy at any one of two or more beam ports of the Rotman lens.